

Further new taxa in *Dryandra* R. Br. (Proteaceae: Grevilleoideae)

A.S. George

'Four Gables', 18 Barclay Road, Kardinya, Western Australia 6163

Abstract

George, A.S. Further new taxa in *Dryandra* R.Br. (Proteaceae: Grevilleoideae). *Nuytsia* 15(3): 337–346 (2005). The following new taxa in *Dryandra* are described: *D. prionotes* A.S. George, *D. ferruginea* subsp. *magna* A.S. George, *D. fraseri* var. *crebra* A.S. George, *D. fraseri* var. *effusa* A.S. George, *D. ionthocarpa* subsp. *chrysophoenix* A.S. George and *D. pteridifolia* subsp. *inreita* A.S. George.

Introduction

Since the publication of the account of *Dryandra* in "Flora of Australia" (George 1999), research in the genus has continued, assisted by new collections. A new species (discovered early in 2002) and five new infraspecific taxa are described here. A number of variants that may represent further new taxa await collection of further material for study. These include specimens related to *D. borealis* A.S. George, *D. conferta* Benth., *D. ferruginea* Kippist ex Meisn., *D. nivea* (Labill.) R. Br., *D. plumosa* R. Br. and *D. pteridifolia* R. Br. The series *Niveae* Benth., in particular, would make a good topic for a PhD. Several new presumed hybrids have also been discovered, e.g. one between *D. longifolia* subsp. *archeos* A.S. George and *D. armata* var. *ignicida* A.S. George.

Taxonomic concepts adopted here for the ranks of species, subspecies and variety remain the same as those adopted in the author's previous papers, e.g. George (1991), George (1996). The format and terminology for descriptions follow those explained in "Flora of Australia" 17B: 252 (1999). The term "kwongan" was proposed by Beard (1976) as an indigenous term for the sclerophyllous shrublands of south-western Australia, comparable with the maquis, chaparral and fynbos of the Mediterranean, California and South Africa, respectively. Since all taxa described here are rare, precise locality details have been withheld for conservation reasons. Distributions of the new taxa are mapped (Figure 2).

Taxonomy

Dryandra ferruginea Kippist ex Meisn., *Hooker's J. Bot. Kew Gard. Misc.* 7: 123 (1855). Type: south-western Western Australia, late 1840s, *J. Drummond* 5: 416 (*syn*: BM, CGE, K, NY).

Dryandra ferruginea subsp. ***magna*** A.S. George, *subsp. nov.*

Ab *Dryandra ferruginea* subsp. *tutanningensis* A.S. George lobis foliorum marginibus revolutis, bracteis inflorescentiae pubescentibus, et folliculis minoribus (9–11 mm longis), differt.

Typus: N of Nyabing, Western Australia, 33° 30' S, 118° 08' E, 30 July 1986, A.S. George 16699 (*holo*: PERTH 03462390; *iso*: K, MEL).

Shrub to 1.5 m high without lignotuber. *Leaves* broadly linear; lamina 10–30 mm wide; lobes spreading or ascending, narrowly triangular; margins revolute. *Involucral bracts* 70–80 mm long, pubescent outside, the upper margins sometimes lacerated; *floral bracts* 10–12 mm long, elongating to c. 15 mm in fruit. *Perianth* 44–53 mm long; limb 10–13 mm long. *Pistil* 43–62 mm long; pollen presenter 7–10 mm long. *Follicles* 9–11 mm long.

Specimens examined. WESTERN AUSTRALIA: Manuel Rd, E of junction with Nyabing South Rd, 30 July 1986, A.S. George 16696 (PERTH); Wedin Rd South, 19 Sept. 1999, G. Warren, C. Taylor & P. Rose 456 (PERTH).

Distribution. Western Australia, near Nyabing and north of Dumbleyung.

Habitat. Yellow-grey sandy gravel over laterite, or gravelly loam, in tall shrubland, sometimes with mallee eucalypts.

Flowering period. July and August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The epithet *magna* refers to the size of the inflorescence.

Affinities. This appears most similar to *D. ferruginea* subsp. *tutanningensis* A.S. George in having a large inflorescence (involucral bracts 7–8 cm long) but differs in the wholly pubescent involucral bracts and the more strongly revolute leaf margins. The few follicles seen are smaller than those of subsp. *tutanningensis*. The known populations are disjunct and are all on road verges in the agricultural region. The plants are non-lignotuberous, hence are vulnerable to disturbance such as fire and weed encroachment.

The subspecies of *D. ferruginea* may be keyed out as follows.

1. Stems erect
 2. Leaf lobes ascending at c. 70°–80°
 3. Involucral bracts 70–80 mm long (near Nyabing, Dumbleyung) subsp. **magna**
 3. Involucral bracts 30–66 mm long
 4. Pistil 50–66 mm long; involucral bracts 50–66 mm long
(SE of Pingelly, E of Quairading) subsp. **tutanningensis**
 4. Pistil 30–45 (50) mm long; involucral bracts 30–50 mm long, rarely longer
 5. Leaf lamina 15–35 cm long, 10–28 (–40) mm wide; lobe margins revolute
(Wickepin to Nyabing and Lake Grace) subsp. **ferruginea**
 5. Leaf lamina 8–15 cm long, 18–35 mm wide; lobe margins almost flat
(Stirling Ra.) subsp. **pumila**
 2. Leaf lobes ascending at c. 60°–70° (Corrigin area) subsp. **obliquiloba**
 1. Stems prostrate
 6. Leaves 20–45 mm wide; lobes usually falcate, sometimes reflexed
(Newdegate–Ravensthorpe) subsp. **chelomacarpa**
 6. Leaves 7–15 mm wide; lobes triangular, at c. 90° (E of Lake King) subsp. **flavescens**

Dryandra fraseri R. Br., *Suppl. Prodr. Fl. Nov. Holl.* 39 (1830). Type: Swan River, [Western Australia], 1827, *C. Fraser* (*holo*: BM; *iso*: K).

Dryandra fraseri R. Br. var. ***crebra*** A.S. George, *var. nov.*

Ab *Dryandra fraseri* R. Br. var. *fraseri* habitu humiliori plerumque effuso, foliis brevioribus, lobis brevioribus, crebris, floribus plerumque minoribus (pistillo 25–30 mm longo) differt; et ab var. *effusa* A.S. George lobis foliorum linearibus glaucis differt.

Typus: First North Rd, N of Three Springs–Eneabba Rd, Western Australia, 29° 42' S, 115° 21' E, 6 Aug. 1986, A.S. George 16805 (*holo*: PERTH 04562623; *iso*: MEL).

Shrub usually less than 50 cm high. *Leaves* commonly less than 5 cm long; lobes linear, crowded (1–3 mm apart), mostly less than 8 mm long, glaucous; margins revolute. *Involucral* bracts glabrous to shortly pubescent in lower half, with very dark indumentum towards apex. *Perianth* sparsely to densely hirsute above base. *Pistil* 25–30 mm long. (Figure 1A)

Selected specimens examined. WESTERN AUSTRALIA: Jurien Bay Rd, 29 Aug. 1938, W.E. Blackall 3675 (PERTH); Breakaway Farm, 29 July 1995, M. Hislop 51 (PERTH); W of Three Springs on Eneabba Rd, 6 Aug. 1986, M. Pieroni 21 (PERTH).

Distribution. Western Australia, between Badgingarra and a short distance north-east of Eneabba.

Habitat. Sandy loam or sandy clay over laterite, in kwongan.

Flowering period. July and August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. From the Latin *crebrus*, crowded, in reference to the leaf lobes.

Affinities. The low habit, short leaves and crowded linear leaf lobes give this taxon a distinctive aspect. In its indumentum the perianth resembles var. *fraseri* rather than the two other varieties.

Dryandra fraseri var. ***effusa*** A.S. George, *var. nov.*

Ab *Dryandra fraseri* R. Br. var. *fraseri* habitu humiliori plerumque effuso, et foliis brevioribus, lobis brevioribus, crebris, differt; et ab var. *crebra* A.S. George lobis foliorum anguste triangularibus differt.

Typus: NE of Mt Lesueur, Western Australia, c. 30° 09' S, 115° 09' E, 3 July 1998, A.S. George 17420 (*holo*: PERTH 06037984; *iso*: K, MEL, NSW).

Shrub usually less than 50 cm high. *Leaves* commonly less than 6 cm long; lobes narrowly triangular, commonly less than 7 mm long, crowded; margins revolute. *Involucral* bracts finely and closely pubescent, the indumentum towards apex very dark. *Perianth* hirsute above base, pink or cream; limb green or cream. *Pistil* 27–34 mm long. (Figure 1B)

Other specimen examined. WESTERN AUSTRALIA: Mt Lesueur Natl Park, 9 Aug. 1996, *Bill Evans* (PERTH).

Distribution. Western Australia, near Mt Lesueur.

Habitat. Lateritic clay-loam, in kwongan.

Flowering period. July and August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. From the Latin *effusus* (spread out, sprawling), in reference to the growth habit.

Affinities. Plants referable to this variant were mentioned in the discussion under *D. fraseri* var. *fraseri* in *Flora of Australia* 17B: 285 (1999), although the length of the leaf lamina given there (5–10 cm) and that of the pistil (30–42 mm) erroneously excluded them. Like var. *crebra*, var. *effusa* has consistently shorter leaves than the varieties described therein. It is similar to var. *crebra* in the low, sprawling habit but is distinguished by the narrowly triangular leaf lobes that leave the undersurface exposed. The foliage lacks the blue tinge of var. *crebra*.

The circumscription of the species should now be amended to take into account the length of the leaf lamina and pistil in these two varieties. The varieties of *D. fraseri* may be keyed out as follows.

1. Perianth claws pubescent to hirsute
 2. Shrub usually 50–150 cm tall; leaf lamina usually 8–10 cm long, the lobes openly spaced (sinus commonly 3–5 mm wide); pistil 30–37 mm long var. **fraseri**
 2. Shrub usually less than 50 cm tall; leaf lamina less than 6 cm long, the lobes closely crowded (sinus commonly 1–3 mm wide); pistil 27–34 mm long
 3. Leaf lobes linear, glaucous var. **crebra**
 3. Leaf lobes narrowly triangular, green var. **effusa**
1. Perianth claws glabrous or sparsely pubescent
 4. Pistil 30–35 mm long; sprawling shrub to 1 m, with lignotuber var. **ashbyi**
 4. Pistil 38–42 mm long; erect shrub to 6 m, without lignotuber var. **oxycedra**

Dryandra ionthocarpa A.S. George, *Nyctisia* 10: 376 (1996). Type: near Kamballup, Western Australia, 34° 35' S, 117° 59' E, 11 Oct. 1988, *P. Luscombe s.n.* (*holo*: PERTH 03462099; *iso*: AD, CANB, K, MEL, NSW, PERTH 03462102).

Two more populations of this species have been discovered east of Brookton and further material collected. They differ from the Kamballup population in having a lignotuber and in some foliar and floral details and are here described as a new subspecies.

1. Plant non-lignotuberous; margins of leaf lobes gently curved; perianth 39–43 mm long; pistil 43–44 (–57) mm long subsp. **ionthocarpa**
1. Plant lignotuberous; margins of leaf lobes almost straight; perianth 52–60 mm long; pistil 63–65 mm long subsp. **chrysophoenix**

Dryandra ionthocarpa* A.S. George subsp. *ionthocarpa

Shrub without lignotuber. Margins of *leaf lobes* gently curved. *Floral bracts* 5–6 mm long, apparently not elongating in fruit. *Perianth* 39–43 mm long including limb 7–8 mm long; claws pink–mauve; limb pale yellow. *Pistil* 43–44 (–57) mm long; pollen presenter 3.5–4.8 mm long. *Follicles* obovate, 5–6 mm long, with an apical tuft of hairs, otherwise glabrous. (Figure 1C)

Distribution. Western Australia, near Kamballup.

Habitat. Spongolitic gravel, in kwongan.

Flowering period. September and October.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Dryandra ionthocarpa* subsp. *chrysophoenix* A.S. George, *subsp. nov.

Ab *Dryandra ionthocarpa* A.S. George typica habitu lignotubero, perianthio longiore (52–60 mm longo) et pistillo longiore (63–65 mm longo), praecipue differt.

Typus: near Aldersyde, Western Australia, 32° 22' S, 117° 16' E, 23 Oct. 1999, *M. Pieroni* 99/15 (*holo:* PERTH06406289; *iso:* K, MEL, NSW).

Shrub with lignotuber, apparently clonal. Margins of *leaf lobes* almost straight. *Floral bracts* c. 4 mm long, elongating to 6–7 mm in fruit. *Perianth* 52–60 mm long including limb 6–11.5 mm long; claws purple–red; limb golden. *Pistil* 63–65 mm long; pollen presenter 3–5.5 mm long. *Follicles* (not seen mature) obovate, 9–11 mm long, tomentose on stylar edge, as well as having the prominent apical tuft characteristic of the species. (Figure 1D)

Selected specimens examined. WESTERN AUSTRALIA: Kalvedon Rd, E of Aldersyde Rd, *K. Kershaw* 2310 (PERTH); Jingaring Reserve, *F. Obbens, R. Davis & L. Sage* FO335/98, 8 Dec. 1998 (PERTH).

Distribution. Western Australia, known from three populations east of Brookton.

Habitat. Brown or white sandy loam over laterite or granite, in kwongan, sometimes with scattered *Allocasuarina huegeliana*.

Flowering period. July and August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. From the Greek *chryso-* (golden) and *phoinix* (purple–red), in reference to the striking combination of gold and purple in the perianth; *phoinix* also referring to the plant's ability to sprout from its rootstock after fire, just as the fabled phoenix could arise from its own funeral pyre. The Latinised form *phoenix* is preferred for the botanical epithet.

Affinities. This is closely allied with *Dryandra ionthocarpa* in all aspects of its morphology, differing

mainly in having a fire-tolerant rootstock. The margins of the leaf lobes are straighter than those of subsp. *ionthocarpa*. Generally its flowers are larger than those of typical *D. ionthocarpa*, but several collections of the latter have large flowers. It appears to set mature fruit very rarely, examination of the plants showing only a few follicles that appeared to be immature. The account of *D. ionthocarpa* in "Flora of Australia" vol. 17B stated that the floral bracts do not elongate as the fruit develops, but that may not be the case as some elongation was noted in subsp. *chrysophoenix*.

Dryandra prionotes A.S. George, *sp. nov.*

Ab *Dryandra armata* R. Br. foliis longioribus (9–15 cm longis), rectis, dentibus pluribus (10–18 in quoque margine), inferus lanatis, perianthio limbo incluso hirsutioribus, et fructu majore, praecipue differt.

Typus: S of Cataby Roadhouse, Brand Hwy, Western Australia, c. 30° 47' S, 115° 35' E, 16 July 2002, A.S. George 17599, M. Pieroni, F. & J. Hort (*holo*: PERTH 06406297; *iso*: K, MEL, NSW).

Shrub 50–70 cm m high with lignotuber. *Leaves* erect, broadly linear, somewhat channelled, 9–15 cm long, 12–18 mm wide; lamina glabrous above except some short curled hairs along midrib, woolly below; lobes 10–18 each side, curved–triangular; margins shortly recurved; petiole 5–10 mm long. *Inflorescence* terminal, subtended by a few reduced leaves; involucral bracts narrowly ovate (outer) grading to oblong, the largest 22–24 mm long, closely hirsute, pale brown; receptacle slightly convex; flowers c. 60 per head. *Floral bracts* lanceolate, obtuse, 7–8 mm long, glabrous except pubescent upper part. *Perianth* 29–32 mm long, ± straight; claws pinkish, densely hirsute; limb 6–6.5 mm long, almost glabrous at apex, green at base, pink towards apex. *Pistil* 36–38 mm long, ± straight, hirsute in lower half; pollen presenter 3–3.5 mm long, not thickened, faintly ribbed; hypogynous scales narrowly ovate–oblong, c. 1.5 mm long. *Follicles* ovate–oblong, 13–16 mm long, with scattered long hairs; floral bracts enlarging to 13–15 mm long in fruit, lanceolate in upper half, with scattered hairs. (Figure 1E–G)

Selected specimens examined. WESTERN AUSTRALIA: type locality, 10 Oct. 2001, F. & J. Hort (PERTH); type locality, 7 July 2002, F. & J. Hort and M. Pieroni (PERTH).

Distribution. Western Australia, known from one population south of Cataby, Brand Hwy.

Habitat. A lateritic rise, in low kwongan.

Flowering period. July and August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The Greek *prion-* (saw-) with the suffix *-otes* (denoting quality) refers to the leaf margins.

Affinities. This is closely related to *Dryandra armata* R. Br., a widespread, variable species. The longer, erect leaves with a woolly lower surface give it a distinctive aspect (always spreading in *D. armata*), the perianth is more hairy, and the follicle is larger. The floral bracts are larger at flowering and are pubescent in the upper half but do not lengthen to the same degree as those of *D. armata* (4–7 mm at flowering, c. 17 mm at fruiting, glabrous). There is a single population of about 70 plants of *D. prionotes*. *Dryandra armata* var. *armata* occurs in surrounding districts. In the 2002 season, when the type was collected, almost all inflorescences were damaged by insects.

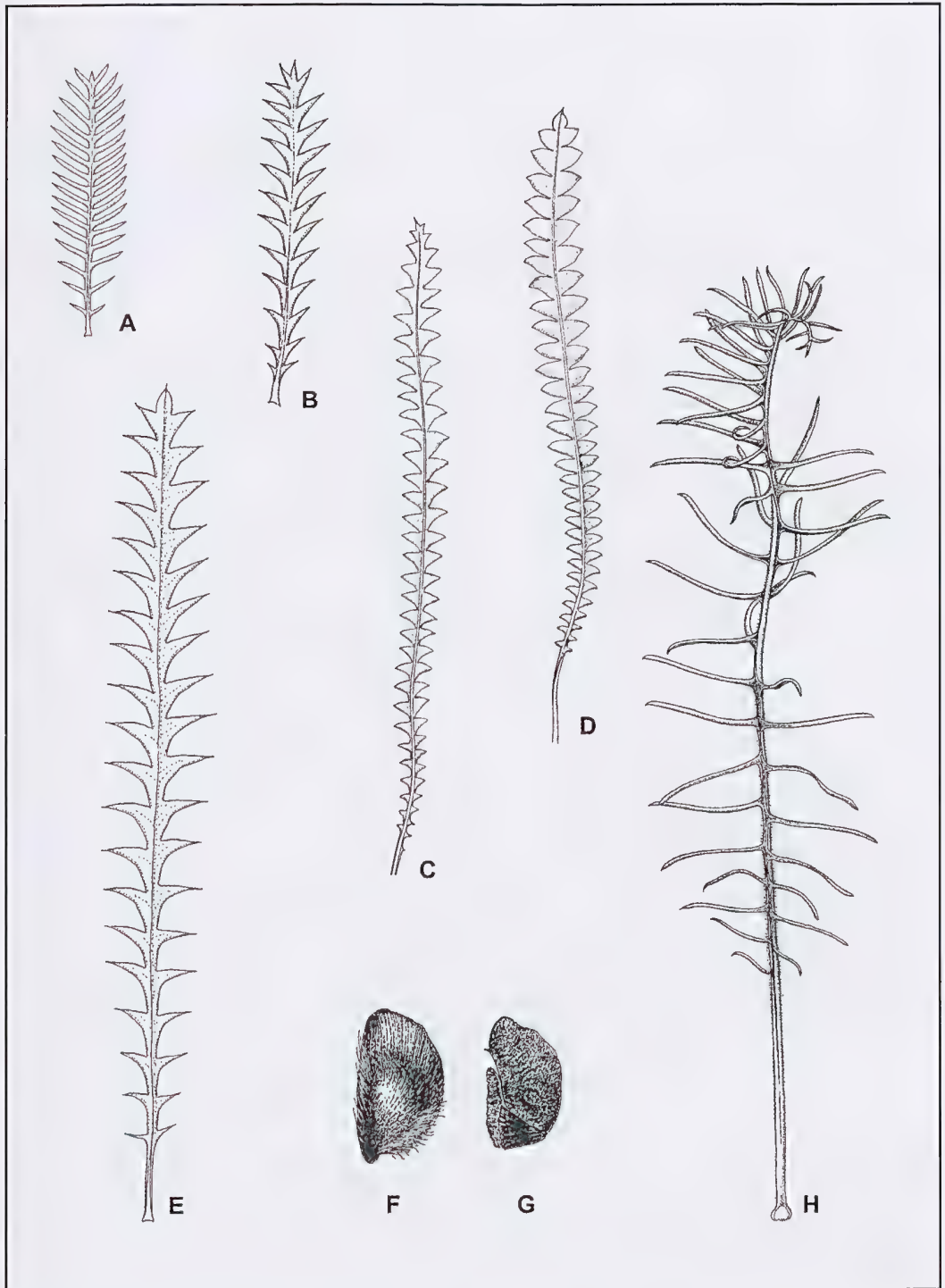


Figure 1. A – *Dryandra fraseri* var. *crebra*, leaf $\times 1$. B – *Dryandra fraseri* var. *effusa*, leaf $\times 1$. C–D *Dryandra ionthocarpa*, leaves $\times 0.5$; C – subsp. *ionthocarpa*; D – subsp. *chrysophoenix*. E–G *Dryandra prionotes*, E – leaf $\times 1$; F, follicle $\times 2$; G – seed $\times 2$. H – *Dryandra pteridifolia* subsp. *inretita*, leaf $\times 0.5$.

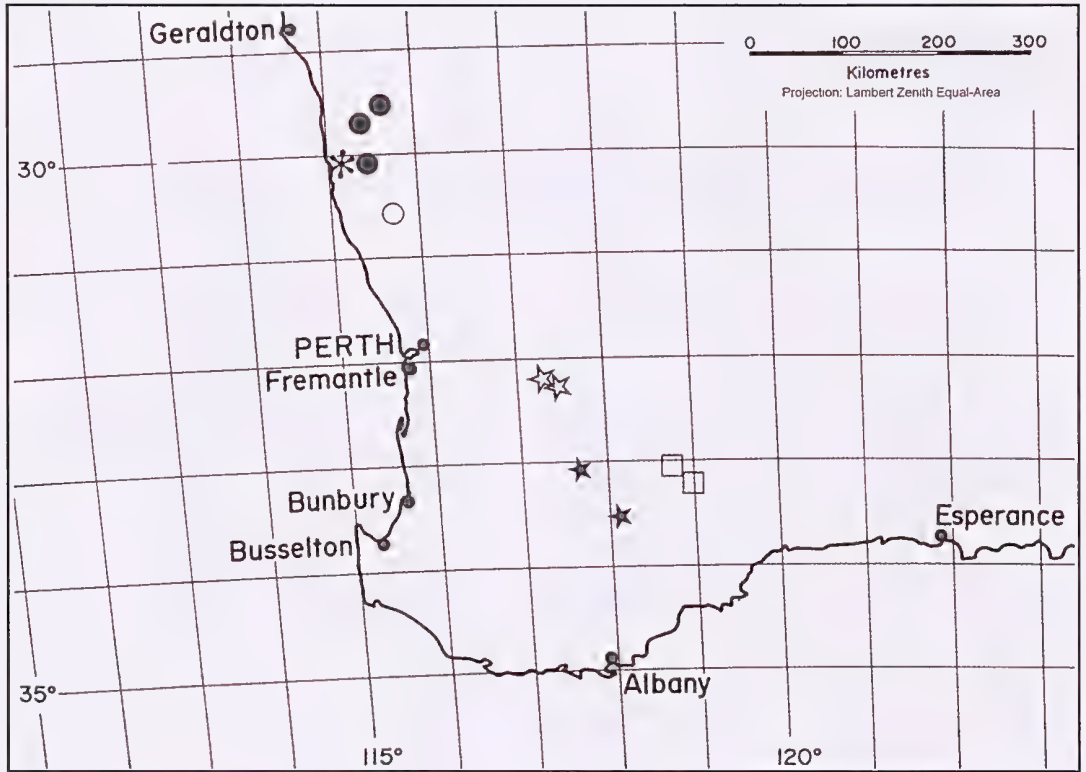


Figure 2. Distribution of *Dryandra* taxa: *D. prionotes* ○; *D. ferruginea* subsp. *magna* ★; *D. fraseri* var. *crebra* ●, *D. fraseri* var. *effusa* ✱; *D. ionthocarpa* subsp. *chrysophoenix* ☆ and *D. pteridifolia* subsp. *inretita* □.

In the key to species in George (1999) this runs to lead 69: (p. 260). Couplet 71 should be amended thus:

- 71 Perianth 25–39 mm long
 - 71a Leaves spreading, with 5–13 lobes each side; floral bracts glabrous; follicles 9–10 mm long **D. armata**
 - 71a: Leaves erect, with 10–18 lobes each side; floral bracts pubescent in upper half; follicles 13–16 mm long **D. prionotes**
- 71: Perianth 22–24 mm long **D. purdieana**

Dryandra pteridifolia R. Br., *Trans. Linn. Soc. London* 10: 215 (1810). *Type*: Bay I [Lucky Bay, Western Australia], Jan. 1802, *R. Brown* Iter Australiensis 3426 (*holo*: BM; *iso*: K).

Dryandra pteridifolia subsp. ***inretita*** A.S. George, *subsp. nov.*

Ab *Dryandra pteridifolia* R. Br. subsp. *pteridifolia* foliis parvis lobis filiformibus inflorescentiam cingentibus, differt.

Typus: S of Mallee Hill Rd on South Burngup Rd, Western Australia, 33° 19' S, 118° 58' E, 10 July 1998, *M. Pieroni* 98/4 (*holo*: PERTH 06406343; *iso*: AD, BRI, K, MEL, NSW).

Shrub with prostrate stems and lignotuber. *Leaves* similar to those of subsp. *pteridifolia*, but surrounding the inflorescence are many small leaves (less than 10 cm long) with filiform lobes. Flowers strongly scented like onions and honey. (Figure 1H)

Selected specimens examined. WESTERN AUSTRALIA: E of Lake Grace, *A.S. George* 16712, 30 July 1986 (PERTH); South Burngup Rd, S of Lake Grace–Newdegate Rd, *A.S. George* 16731, 1 Aug. 1986 (PERTH); Lake Grace–Newdegate Road, W of Buniche North Rd, *M.S. Graham*, 2 Feb. 1998 (PERTH); Reserve 24920, *R. Meissner* LB66, 1 Nov. 2000 (PERTH).

Distribution. Western Australia, between Lake Grace and Lake King.

Habitat. Sandy loam, sometimes over laterite, in open mallee kwongan.

Flowering period. July and August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. From the Latin *inretio* (to ensnare, entrap), in reference to the enmeshed aspect of the inflorescence being surrounded by short, finely lobes leaves.

Affinities. This differs from typical *Dryandra pteridifolia* in having many short leaves with filiform lobes surrounding the inflorescence. It occurs farther inland than subsp. *pteridifolia*. It is placed in this species rather than with *Dryandra fililoba* A.S. George, which has similar floral leaves but a pistil slightly shorter than the perianth.

The subspecies of *D. pteridifolia* may be keyed out as follows.

1. Inflorescence surrounded by many short leaves
(less than 10 cm long) with filiform lobes subsp. ***inretita***
1. Inflorescence not surrounded by short leaves
 2. Leaf lobes usually twisted; pollen presenter 4.5–5 mm long;
autumn-flowering subsp. ***pteridifolia***
 2. Leaf lobes not or little twisted; pollen presenter *c.* 8 mm long;
spring-flowering subsp. ***vernalis***

Acknowledgments

Margaret Pieroni has continued to share her great knowledge of dryandras freely and to collect specimens of new taxa and variants, as well as named taxa from new localities. Fred and Jean Hort, Frank Obbens, Rob Davis, Leigh Sage and Brian Moyle have contributed useful collections from their field work, some of which require further study before they can be determined satisfactorily. The Western Australian Herbarium allowed access to its collections.

References

- Beard, J.S. (1976). An indigenous term for the Western Australian sandplain and its vegetation. *Journal of the Royal Society of Western Australia* 59: 55–57.
- George, A.S. (1991). New taxa, combinations and typifications in *Verticordia* (Myrtaceae: Chamelaucieae). *Nuytsia* 7: 231–394.
- George, A.S. (1996). New taxa and a new infrageneric classification in *Dryandra* R. Br. (Proteaceae: Grevilleoideae). *Nuytsia* 10: 313–408.
- George, A.S. (1999). *Dryandra*. In A.E. Orchard *et al.* (eds), “Flora of Australia” vol. 17B, pp 251–319, 324–363, 382–391, 397. (Australian Biological Resources Study, Canberra, and CSIRO, Melbourne).